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AUTHOR Ash, Philip
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ABSTRACT

A written examination may discriminate against candidates if the reading difficulty level of the test is higher than the minimum educational level required for entry into the position for which the examination is used as a screening device. Tests used for examining applicants for positions in a large heterogeneous merit jurisdiction and in a city police department were assessed for reading level required for comprehension of test content, using the SMOG index. Of the 134 examinations developed by the merit system, 47 percent required a reading level above the minimum educational requirement, and for jobs with no minimum educational requirement, 44 percent required a reading level beyond high school. Of six purchased professionally developed tests used by this merit system, however, only one required verbal facility above the educational level required for the job for which it is used. Of the six police department tests, all required a reading level above the minimum entry educational attainment requirement. It is recommended that tests be more carefully evaluated from the point of view of reading difficulty, and that those tests which exceed in reading difficulty the minimum educational qualifications for the job be revised to reduce this discrepancy. (Author)

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The Reading Difficulty of Merit System Tests

Philip Ash

University of Illinois at Chicago Circle

Summary

A written examination may discriminate against candidates if the reading difficulty level of the test is higher than the minimum educational level required for entry into the position for which the examination is used as a screening device. Tests used for examining applicants for positions in a large hetrogeneous merit jurisdiction and in a city police department were assessed for reading level required for comprehension of test content, using the SMOG index. Of the 134 examinations developed by the merit system, 47 percent required a reading level above the minimum educational requirement, and for jobs with no minimum educational requirement, 44 percent required a reading level beyond high school. Of six purchased professionally developed tests used by this merit system, however, only one required verbal facility above the educational level required for the job for which it is used. Of the six police department tests, all required a reading level above the minimum entry educational attainment requirement. It is recommended that tests be more carefully evaluated from the point of view of reading difficulty, and that those which exceed in reading difficulty the minimum educational qualification for the job be revised to reduce this discrepancy.

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Introduction. Reading difficulty level is a generally neglected dimension of test construction, but one which may be very important in an individual's ability to perform satisfactorily on an examination. Johnson and Bond (1950) used the Flesch (1948) index in analyzing a number of commonly used tests. Their grade-level findings included: Bennett Mechanical Comprehension, MMPI, and directions for Minnesota Clerical (grade 5.5-6.0); Bell Adjustment Inventory, directions for Kuder Occupational Preference Record (grade 7.0); directions for Strong Vocational Interest Blank (grade 7.5-8.0); directions for the Bell, the Kuder, directions for Allport-Vernon (grade 9.5-10.0); Ohio State Psychology Test, SVIB, Allport-Vernon (grade 15.0).

These results give an indication of the reason for the failure of the Strong Vocational Interest Blank, for example, to elicit dependable interest patterns for blue collar workers. Comprehension of the directions for the test requires reading facility at the eighth-grade level, but understanding of the items requires comprehension at the level of three years of college (Cronbach, 1960). Johnson and Bond urged counselors to take reading achievement levels of their subjects into account when selecting inventories. Both mobility required to comprehend the instructions and ability required to understand the items prevent informed and relevant response, as in the cases of the Strong and Allport-Vernon.

If the reading difficulty level of a test is higher than the minimum

education required for entry into the position for which it is used as a selection device, applicants who have a low level of verbal facility will be penalized, however well qualified they may be for the job. This is particularly important in view of the probability that excessively difficult reading comprehension levels do not affect all groups of applicants equally. Differences in educational levels attained by different ethnic, socio-economic and racial groups militate against the success of ethnic minorities in test-selection procedures. The Griggs vs. Duke Power Company decision of the Supreme Court of the United States ruled illegal selection devices which exclude individuals from jobs on non-job-related dimensions. The high verbal facility level measured by excessively-difficult tests is one of these dimensions.

In two studies reported here the reading difficulty level of civil service tests used by two merit system jurisdictions were determined.

The first study involved a large state-wide merit system encompassing over 900 positions titles (over 21,000 positions) for which more than 31,000 examinations are administered yearly. These positions range from unskilled labor to professional positions, encompassing such diverse areas as medicine, agriculture, finance, data processing, personnel management, and aeronautics. Over one-third of the positions are clerical.

The second study involved large metropolitan police department.

Method

Merit System Study. Six professionally developed (purchased) examinations and 134 job title examinations developed by the System were assessed for readability. This sample of tests was neither random nor "representative" of the 800-pluss tests given. They were chosen on the basis of the following criteria: (1) the black applicant pass rate was significantly lower than

for white applicants; or, (2) large numbers of candidates took the test; or, (3) almost no people took the test (so a validity study cannot be made). These 134 tests included both those that the majority of examinees took, and those that had the most adverse impact on minority groups. For each test, a SMOG grade was calculated using McLaughlin's (1969) method. The SMOG grade for each test was compared with the minimum required educational level for the position for which the test was used.

Police Department Tests. The same method was used on six police tests, except that a number of SMOGs were calculated for each test. Six hundred word samples (which McLaughlin (1969) says is the "typical" length of a 30 sentence sample) were used because puncuation varied greatly within and between tests.

Starting with the first and last 600 words of the tests, SMOGs were calculated for every other 600 words until the samples met or overlapped in the middle of the test.

Analysis of Results

Merit System Study. Table 1 shows the comparison of SMOG grades with minimum required educational levels. A sizeable number of System-developed tests have reading difficulty levels above these minimums.

Insert Table 1 About Here

Of 76 examinations with a specific minimum educational requirement, 36 tests required a reading level above the minimum required education, 23 tests had a SMOG grade equal to the minimum required education. Of the 58 tests with no minimum educational requirement, 3 tests required a reading level below the high school level and 25 tests required a reading level beyond that of a high school graduate. Of the 36 tests with a SMOG

grade higher than the minimum educational qualification, 27, or 75 percent required a reading level at least two years higher than the minimum required education.

Of the six purchased tests that were used, five - CS Reading, Cooperative General Science, IBM Programmer's Aptitude, Martin Arithmetic Reasoning, and the Bennett Test of Mechanical Comprehension - had a reading level lower than any of the minimum educational requirements, or, if there was no minimum educational requirement, the SMOG grade was very low, equal to grade 5 for the CS Reasoning and grade 6 for the Bennett Test of Mechanical Comprehension. The PPA Policeman test was the only purchased test used with a SMOG grade higher than the minimum required education for the jobs for which it is used. However, this level was only one year higher than the minimum educational qualification level.

Police Tests. The six tests evaluated were used for promotion in officer ranks, to the levels of sergeant, lieutenant, and captain. In each of the six police position categories for which employees are screened for promotion, the required level of previous educational attainment was 12th grade (high school education). It was found that the average level of educational attainment required to understand the questions on these tests was a minimum of 13.3 years, or over one year of college, and the average reading comprehension level for two of the tests was two years of college. Sections of these tests require, for comprehension, verbal facility of a college graduate or beyond.

Discussion

In both studies, the excessively-high reading difficulty of the tests constitutes a probable source of discrimination against some candidates,

by reducing the likelihood of success in being placed on the roster of applicants who meet the minimum education requirements exactly but have not developed the higher reading skills needed to pass the tests.

This disparity between reading difficulty of the examinations and the minimum education requirements for qualification, unfortunately, tends to make a test racially discriminating. Due to the difference in educational attainment between blacks and whites, raising the level of verbal facility required to effectively handle a test will exclude more of the former group than the latter. This is clearly illustrated when the percent of blacks completing high school and college is compared to that of all races.

	All races	Blacks
Completed High School	55.2%	33.7%
Completed College	11.0%	4.5%
Median School Years Completed	12.2 years	9.9 years

If an examination requires high school graduation for admission, only three out of ten blacks will qualify. When the reading difficulty of the test increases the effective level of education required (in this study sometimes verbal facility on a college graduate level) less than five percent of black applicants will be likely to succeed on the test.

These results point up an important dimension of testing which has not, to date, received the attention it deserves. Since both samples of tests were drawen from merit jurisdictions where utilization of minority candidates is important, immediate action is indicated to ensure that examinations are measuring the relevant dimensions for position qualification and not disqualifying eligable candidates on an irrelevant criterion of high verbal facility.

Table 1

Summary Comparison of Minimum Educational Qualification Requirements with Reading Difficulty Level of Merit System-Developed (not purchased) Tests

SMOG Level of Test (Grade)	Minimum Required Educational Qualification Level (School Grade completed)						
	None	12(HS Grad)	13	14	15	16(College Grad)	Total
8(Grade Schl.)	3						3
9	2	1					3
10	7	2					9
11	10	5		1			16
12(H.S.)	11	(15)*	1	3			30
13	11	8	(4)	1			24
14	8	7	0	(1)		2	18
15	2	14	1		(0)	1	18
16(College)	3	3	1			(3)	10
17(Grad with)	1	0		1		1	3
Total	58	55	7	7	0	7	134

*Number in parenthesis is for tests for which the minimum educational qualification requirement equals the reading difficulty level of the test.

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